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necessitate much reviewing were forbidden. It was expressly ordered that the day and hour for test-exercises "shall not be announced to students more than twenty-four hours before they take place."

The Saxon decrees dated March 4 and 10, 1882, give particular directions as to the scope and methods of instruction, leaving the matter of study-hours untouched. They set forth that instruction in the classical languages is carried to excess in the gymnasias, being in many cases turned into teaching philology as a profession instead of being conducted as a means of general intellectual training. With reference to the '*extemporalia*' that form a prominent exercise in many of the Saxon gymnasias, the decrees are very pronounced. These essays which the students are required to translate and write down in a foreign language from dictation, are often, it is asserted, mere collections of questions in syntax, calculated to produce in the student "a feeling of anxiety and vexation instead of an agreeable consciousness of knowledge." The result in the student is nervous excitement and subsequent intellectual torpor,—conditions from which the young should be carefully guarded.

The Baden ministry published an outline of a decree, March 18, 1883, that had been prepared by the board of health, in conference with a number of teachers. Previous to this time, the different classes of the gymnasias had thirty, thirty-one, thirty-two, and thirty-four hours of study a week, without counting elective studies and gymnastics. These are now reduced to twenty-eight and thirty-two hours for the two groups of classes below and above the secunda. Before 1869 the total number of hours of study for a Baden gymnasium of nine classes was 269 a week, in 1869 it was raised to 286, and it is now 268. Each study-hour is limited to fifty minutes. The amount of home-study is also definitely fixed, and the course of instruction modified somewhat. As an evidence of the necessity of these changes, Professor Baumeister points out that in the lowest class of a gymnasium 1,300 Latin words have to be learned the first quarter of the year, and nearly as many the second, making a daily average of about twenty words. These words, he observes, are not met with in any authors read by the boys till they reach the upper classes, and are generally expressions of ancient life, of which a nine-year old boy knows nothing. The intellectual effort required to memorize these words, leads, he holds, to injurious and lasting effects.

The commission appointed by the stadholder of Alsace Lorraine recommended that the number of study-hours should be restricted to twenty-six a week for the lowest classes of the gymnasias, and to twenty-eight and thirty-two for the higher; that the hours of home-study should be eight, twelve, and eighteen a week, progressing from the lowest class to the highest; and that six hours a week should be devoted to general physical exercise, including swimming, open-air sports, skating, and excursions. While the existing conditions will be somewhat ameliorated by these decrees, they do not seem to have brought about a final solution of the difficulty. Last year a

petition upon the subject, signed by eminent teachers, physicians, and other citizens, was addressed to the Prussian chamber of deputies. After setting forth the deplorable effects of the excessive strain upon the nervous system of scholars, it appealed to the patriotism of the deputies to put an end to the abuse which, the petition asserts, "threatens little by little to reduce the cultivated classes of society to a state of moral weakness that shall render them incapable of great and manly resolution."

#### A PROPOSED NEW DEPARTURE IN HYGROMETRY.

In the *Comptes rendus* for June 30, Mr. Jamin, the newly elected perpetual secretary of the French Académie des sciences, proposes a new departure in hygrometry.

The present system of expressing the amount of vapor of water in the atmosphere is to give the ratio  $\frac{f}{F}$ , of the observed elastic force  $f$ , to the maximum  $F$ , which the vapor would have at the same temperature if the atmosphere were saturated with it, i.e., were at the dew-point; and this is called the 'relative humidity.' Now, as this maximum  $F$  for the point of saturation does not by any means correspond to a constant ratio between the mass of the vapor of water in the air and the mass of its other constituents, but varies largely with the temperature, so that cold air will not hold nearly so much vapor of water as warm air, this system of expressing the amount of this vapor as a percentage of another percentage which is itself very variable, is, in the opinion of Mr. Jamin, a vicious one, at least for many purposes of meteorology.

In its stead he proposes to substitute just what a chemical analysis of the air in question would give; viz., its 'hygrometric richness' as given by the ratio of the amount of vapor of water to that of the other constituents, and as expressed in volume by the fraction

$\frac{f}{H-f}$ , or in mass by  $0.622 \frac{f}{H-f}$ , in which  $H$  is the total pressure of the atmosphere, and the denominator consequently denotes that of dry air, or of all the other constituents but water-vapor.

Since observation does not give directly the relative humidity, but this is derived from an auxiliary table, Mr. Jamin shows that a table can be constructed which will just as readily give the hygrometric richness, for which he proposes to adopt the volume-measure  $\frac{f}{H-f}$ ; and he states that such a table will hereafter be published in the *Annales du bureau central météorologique*.

While the present system has its advantages in showing approximately the nearness to the dew-point, and hence to cloud-formation and possible fall of rain or snow, yet it would seem, that for the wider study of total rainfall and evaporation, in fact of the general diurnal and annual circulation of water between

earth and sky, the proposed plan of Mr. Jamin is the only logical one; and it deserves, and, coming from such a source, will no doubt receive, the thorough consideration of meteorologists. H. M. PAUL.

Washington, July 22.

### INDIAN LANGUAGES OF SOUTH AMERICA.

THE Indian languages of South America certainly deserve to be investigated as thoroughly as any other languages of the globe; but, unfortunately, there are only a few men who make of them an object of research. Abstracts of their grammatical elements have been published, from earlier sources chiefly, by Professor Friedr. Müller in his 'Grundzüge der sprachwissenschaft,' and by Lucien Adam in his 'Examen grammatical de seize langues Américaines' (Paris, 1882). The following treatises, published of late, have come to our notice, and have added considerably to our knowledge of these curious forms of human speech: 1°. Dr. Julius Platzmann's 'Glossar der feuerländischen sprache.' This is an attempt to present the Yahgan dialect of the Fuegian Islands in lexical form, and is chiefly based upon a Fuegian translation of the Gospel of St. Luke. It is preceded by four historical and topographical articles, composed by Dr. Karl Whistling, enlarging upon physical peculiarities of these islands. 2°. The first results of a scientific exploration of the Fuegian Islands by Bove, aided by the government of Italy, have been made public by Giacomo Bove, in his 'I Fuegini, secondo l'ultimo suo viaggio' (Parte prima, Genova, 1883). Extensive vocabularies of the language are published in this volume. 3°. A manuscript of 1818, by John Luccok, containing grammatical elements and a vocabulary of the Tupi language or lingoa geral of Brazil, was published at Rio de Janeiro by H. Laemmert & Co., 1882. Curiously enough, the titlepage contains the statement that the material is 'badly arranged.' 4°. Dr. Julius Platzmann's facsimile edition of Havestadt's book on Chilidúgu, which has been previously referred to in *Science*, iii. 550. 5°. A short ethnographic and linguistic article on the Indians of Antioquia and of the Cauca valley, Columbian Union, was published by R. B. White, F. G. S., in the *Journal of the anthropological institute of Great Britain and Ireland*, 1884. It contains vocabularies of the Noánama and Tadó dialects of the Chocó linguistic family. 6°. In the form of vocabularies of about two hundred terms each, seven Bolivian languages are given by Dr. Edwin R. Heath in the April number (1883) of the *Kansas city review*. These languages are the Canichána, Cayuába, Mobíma, Moseténa, Pacavára, Marópa, and Tacána. The author has given a graphic account of his travels through that deserted and malarial country in the *Transactions of the American geographical society of New York*, 1883. 7°. The foreign and Indian words introduced into the Portuguese of Brazil were collected by Braz da Costa Rabim in the *Rivista trimensal* of Rio Janeiro, vol. xlvi., under the title 'Vocabulos indige-

nas e outros introduzidos no uzo vulgar.' 8°. An array of notices of former travellers upon the Aimorés has been gathered by A. H. Keane, professor at the London university, partly anthropological, partly ethnographical, with a short linguistic appendix, and published with his own remarks in the *Journal of the anthropological institute*, November, 1883 (15 pages, 8°), under the superscription 'On the Botocudos.' The tribal name, Aimorés ('vagrant enemies'), is preferable to and much older than Botocudos ('the ones wearing the lip-ornament'), which applies to many other South-American tribes just as well. Another name, the one by which they call themselves, is Nkrí'kmun (or 'men, people').

### THE NEW BOGOSLOFF VOLCANO.

THE Grewingk or New Bogosloff volcano, described in *Science* (Jan. 25, 1884) from observations made last fall by Capts. Hague and Anderson, was visited by the revenue-cutter Thomas Corwin on the 20th of last May. Photographs and reports have been received at the treasury department which add considerably to our knowledge of its condition. It appears that the two peaks are united by a low dry spit, or bar, of sand and gravel which has doubtless been thrown up by the sea; and Ship Rock now rises from this bar nearly midway between the two peaks. Ship Rock, which is a nearly perpendicular pillar, seems, from the position of the barnacles on its base, to have been raised about twenty feet above its old level. The Bogosloff peak seems to have suffered by the commotion attending the eruption, as the Corwin party estimates its height to be about five hundred feet, while observations in 1873 by the U. S. coast survey gave it a height of over eight hundred feet, the upper third of which was composed of extremely acute, inaccessible pinnacles. As this determination was dependent upon a base-line measured by a patent log, which might have been put considerably in error by currents, too much dependence must not be placed on the discrepancy; nevertheless, as older observations all gave a greater height still, it is probable that a considerable change has taken place, if the Corwin's estimate be correct. The Grewingk cone was stated to be eight hundred or a thousand feet in height, and three-quarters of a mile in diameter, by Capt. Hague. It is now reported to be nearly the same height as the Bogosloff peak, or some four hundred and fifty feet in height and half a mile in diameter. Until the details of the survey are received, no exact figures can be given. A convenient landing-place is formed by the bight on either side of the sand-spit above mentioned, where the shore is also bold, there being three fathoms under the stern, with the boat's head on the beach. Farther off, the soundings are regular for a short distance, and then drop to a considerable depth; north from the Grewingk peak, however, no bottom could be found close in with ninety fathoms of line. The observations for position do not seem to have been very good, owing to cloudy weather, but showed a close correspondence with earlier determinations.